

## **Development of equipment for community-based flash flood early warning in the Caribbean region Hidetomi Oi, Japan**

In order to improve early warning for communities in small and steep river basins and at risk of flash flood, low-cost and simple equipment for rainfall measurement and warning dissemination has been developed by CDERA and its partner organizations and is currently used in pilot communities in the Caribbean region.

At the workshop, the operation of the equipment will be demonstrated, and advantages and disadvantages will be discussed. In view of the advantages, the equipment will be practically useful for flash flood early warning and appropriate for operation by community people. It is hoped that the equipment will be used widely for communities in the Caribbean and other regions while pursuing further improvement in the future.

### **Background**

The Caribbean region is highly prone to natural hazards, of which flood is the most serious. The Regional Programme Framework(2005-2015) prepared for the WCDR (January 2005 in Japan) gave the highest priority on flood management in particular through the establishment of community-based early warning systems.

Most Caribbean countries are small islands and the rivers are so small and steep that floods occur shortly after heavy rains. Therefore the early warning should be issued from rainfall and not from water level.

Most Caribbean countries do not have a dense network of rainfall measurement on the real time basis. Flood warnings are usually issued from synoptic data and are not specific enough for the residents to take actions timely and properly. Community-based flood warning system is necessary in combination with the national system.

In order to establish effective flash flood early warning system widely for communities in the region, equipment for rainfall measurement and warning dissemination which is cheap and easy for operation and maintenance by community people has been developed

### **Features of the equipment**

The equipment comprises of (1) Rain receiver, (2) Rain water storage, (3) Sensor (sensing rods) and (4) Alarm unit.

When the accumulated rain reaches any of the three predefined levels, the alarm unit gives signal by light and buzzer to the gage reader and, at the same time, dials residents and disaster management organizations.

### **Advantages**

- (1) Heavy rains can be detected and informed to the gage reader, residents and concerned organizations quickly even if it occurs suddenly in the midnight without forecast/warning from the meteorological office.
- (2) Operation can be done by a gage reader in the house safely and easily.
- (3) Low cost

(4) Operation and maintenance can be done easily by community people.

### **Disadvantages**

- (1) The equipment detects the predefined levels of accumulated rainfall only. For more accurate warnings, rainfall prior to the event etc. should also be considered.
- (2) The system depends on power and telephone supply.
- (3) The rain receiver has to be installed near the house of the gage reader, not in the remote areas where gage reader is not available.